THE NATURAL LAND TYPE IN LAND-USE PLANNING*

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Classification of the material with which a science deals is prerequisite to the development of any science. To this general rule the science of land-use planning is no exception.

Land classification is by no means new. Ancient historical records contain many notes on land classification of a sort which met the particular needs of the moment. Note, for example, the classic report of the scouts sent out by Moses to view and report on the character of the "promised land". "And see the land, what it is; and the people that dwelleth therein.....And what the land is that they dwell in, whether it be good or bad.....whether it be fat or lean, whether there be wood therein or not.....And they returned from searching the land after forty days.....And they told him, and said, we came into the land whither thou sent us and surely it floweth with milk and honey, and here is the fruit thereof." (Numbers 13: 17-27)

A "milk-and-honey" classification of land such as this of the ancient Hebrews, while no doubt adequate for needs of that time, would not meet the present demand for a more precise classification.

The present wave of interest in land-use planning has brought in a multitude of suggestions, proposals and methods of land classification. Of all these, one of the most promising from the standpoint of usefulness, is that involving the natural land type as the unit, and it is with this unit and method of its use that this paper is concerned.

Barnes (1) has simply and broadly defined a land type by the statement: "A land type consists of all the land possessed of a given set of characteristics," For the present discussion a natural land type is to be considered as

*Paper presented at meeting Southwestern Social Science Ass'n., Dallas, Texas, March 27, 1937

a body of land having such physical, chemical or biological characteristics, natural or induced, as either make it primarily best adapted to a given use or uses, or delimit a condition or set of conditions.

In its simplest form a land type may be identical with a soil type or a phase of a soil type. It may comprise two or more soil types or phases of them. It may even cut across soil types. As Schoenmann (2) has pointed out, there is "need for recognizing a unit of land character that is broader than the soil type, more restricted than the soil group and capable of areal delineation." A good soil survey forms an excellent basis for a land type classification.

One of the best features of the land-type concept is its flexibility. Thus, a land type may be set up for any set of factors which can be clearly defined. However, only those types can be mapped which can be clearly differentiated in the field. This point needs elaboration. It is generally recognized, for example, that the speculation in, and leasing of, land in an oil-producing region, are very real and important factors affecting the character, value and agricultural use of land. But while these are real factors they are in most cases intangible, incapable of differentiation, and therefore not mappable in the field. On the other hand, land physically injured by crude oil and salt water can be mapped.

It may be noted, also, that certain differentiations are possible which may not be practicable. For example, it is possible to map land according to its content of phosphorus, by taking numerous soil samples and having these analyzed in the laboratory, but this is a time-consuming, expensive procedure which would not be practicable except under special circumstances or as incidental to other work.

The rate at which land-type mapping can be done will depend on several factors, chief of which are the number of categories, homogeneity of the area, visibility, character of roads, and detail desired. For areas in which land-use

planning studies are being made or contemplated our field work has progressed at the rate of 25-30 square miles per day for each technical man working. With a good soil type map to use as a basis the time required for field work can be reduced considerably. This gives what we are designating, for the lack of a better term, a detailed reconnoissance survey. We consider a map so made to be in sufficient detail to permit the formulation of a program of land use or remedial action in an area as large or larger than the average county. The scale of one inch to the mile is usually followed in such mapping. For land use and remedial action plans on small areas such as individual farms the scale should be much larger, say 8 inches to the mile.

The first step in land-type classification is the setting up of suitable categories. Careful study and thought in the formulation of the classes so as to meet the specific conditions of the area and objectives of the classification are quite necessary. All available literature and data bearing on the conditions and problems of the area, such as soil survey reports, census data, experiment station publications and local history should be assembled and studied. County agricultural agents and others having local information should be interviewed. A preliminary reconnoissance survey of the area should be made. Then the categories may be set up with considerable assurance that they will serve the purpose of the classification.

Details of the categories need not, and seldom will be the same for any two areas. It is obvious that differences in conditions, problems and objectives will call for different details of classification. However, it is desirable and usually possible to make the classification of different areas follow a broad outline. In our work at present we are using four main categories, which are:

A. Arable; recommended for crop production in present condition.

B. Arable; recommended for crop production after remedial action.

C. Non-arable; recommended for permanent pasture and/or woodland.

N. Non-agricultural; recommended for or occupied by non-agricultural uses including urban, industrial, recreation, highways, etc.

These groups are subdivided into classes to meet the special conditions and objectives. At present most of our classifications include 10 to 15 classes. A detailed classification is illustrated by the attached outline for Falls County, Texas. The adherence to a uniform gross outline as above makes it possible to blend together into a unified map the individual maps of isolated areas.

To summarize, the natural land type is one of the most promising units of land classification now in use. It is more comprehensive than the soil type, more restricted than the soil group, and capable of areal delineation. Its flexibility and adaptability make it especially useful in land-use planning.

References:

1 - Barnes, C. P. Land Classification
Land Use Planning Publication No. 1
Land Utilization Division, Resettlement Admin.
Washington, D. C. (1936)

2 - Schoenmann, L. R.
Essential elements in land classification
Unpublished paper read before Joint Session of the American Soil Survey Association and American Society of Agronomy, Washington, D. C. November 10, 1936.

Note: Land-type maps of Wise and northern Fannin Counties, Texas, were shown in connection with the presentation of this paper.

C. Non-arable; recommended for permanent pasture and/or woodland.

U. Non-agricultural; recommended for or occupied by non-agricultural uses including urban, industrial, recreation, highways, etc.

These groups are subdivided into classes to meet the special conditions and objectives. At present most of our classifications include 10 to 15 classes. A detailed classification is illustrated by the attached outline for Palo County, Texas. The reference to a uniform grass outline is done where it possible to blend together into a unified map the individual maps of isolated areas.

To summarize, the natural land type is one of the most promising units of land classification now in use. It is more comprehensive than the soil type, more restricted than the soil group, and capable of great delineation. Its flexibility and adaptability make it especially useful in land-use planning.

References:

1 - Barnes, O. P. Land Classification
Land Use Planning Publication No. 1
Land Utilization Division, Resettlement Admin.
Washington, D. C. (1936)

2 - Schoenmann, L. R.
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Land Types

A. Arable; recommended for crop production in present condition

1. Best upland and terrace prairie heavy soils; topography level to undulating, slopes less than 3%; erosion negligible; drainage good. Adapted to cotton, corn, oats, grain sorghums. Soil types included: Houston black clay; Houston black clay, flat phase; Houston black clay, gravelly phase; Houston clay; Houston clay, colluvial phase; Bell clay; Lewisville clay; Wilson clay; Wilson clay loam; Irving clay loam.

2. Same as 1 except sandy, adapted to fruits, vegetables, cotton, corn. Soil types included: Crockett fine sandy loam; Falls fine sandy loam; Irving fine sandy loam; Wilson fine sandy loam; Milam fine sandy loam.

3. Best bottom land, not seriously affected by overflow, adapted to cotton and corn. Soil types included: Miller clay; Yahola clay; Yahola fine sandy loam; Trinity clay; Pledger clay; Catalpa clay; Catalpa clay loam; Ochlockonee fine sandy loam.

B. Arable; recommended for crop production, but remedial action is necessary. Crop adaptations same as A group.

4. Upland and terrace prairie heavy soils with slopes 3% to 7%. Soil types same as A1 and Crockett clay loam and Irving clay loam, shallow phase.

5. Sandy land slopes 3% to 5% and slopes less than 3%, but lower productivity than A2. Soil types same as A2, and Leaf fine sandy loam, Tabor fine sandy loam, Susquehanna fine sandy loam.

6. Bottom land; soils well drained and productive, but subject to overflow hazard. Soil types same as A3.

C. Non-arable, recommended for permanent pasture and/or woodland.

7. Rolling to hilly prairie land, with slopes greater than 7%. Soil types the same as B4, and Houston clay, shallow phase, Houston clay gray phase, Sumter clay, chalk.

8. Sandy land, slopes over 5%. Soil types same as B5, and Riesel fine sandy loam.

9. Deep sands.

10. Undifferentiated bottom lands, poorly drained and/or sanded and/or rough. Same soil types as A3 and river wash.

N. Non-Agricultural

11. Land now used for urban and recreation purposes.